

## Recombinant Human Annexin V Protein (100 µg)

**Cat.No. AV100**

**Package Size:** 100 µg

### Description:

Annexins are ubiquitous homologous proteins that bind phospholipids in the presence of calcium (1, 2). The cellular changes involved in the apoptotic process include loss of phospholipid asymmetry during the early stages. This phenomena is universal and is not limited to stimulus or to mammalian cells, but also occurs in insect and plant cells (3, 4). In living cells, phosphatidylserine is transported to the inside of the lipid bilayer by the Mg<sup>2+</sup>-ATP dependent enzyme, aminophospholipid translocase (5).

At the onset of apoptosis, phosphatidylserine becomes translocated to the external portion of the membrane. Since the movement of phosphatidylserine from the internal membrane surface to the external surface is an early indicator of apoptosis, Annexin V and its conjugates that interact strongly and specifically with phosphatidylserine may be used to detect apoptosis (6). Annexin V conjugates can be used to detect apoptotic cells significantly earlier than DNA-based assays. Fluorescent dye labeled Annexin V has applications in flow cytometry, fluorescence microscopy, and laser scanning cytometry (7).

**Synonyms:** PAP-1, Calphosbindin I, Lipocortin V

**Purity Grade:** Minimum 95% (SDS-PAGE)

**Form/ Aspect:** Solution in phosphate-buffered saline  
(pH7.4, 136 mM NaCl, 2.68 mM KCl, 10 mM Na<sub>2</sub>HPO<sub>4</sub>, 1.76 mM KH<sub>2</sub>PO<sub>4</sub>)

**Concentration:** 1 mg / ml

**Source:** Recombinant Annexin V from Human placenta, produced in *E. coli*.

**Storage Temp:** Store at 2~8°C.

### Reference:

1. Pigault, C., et al., Formation of two-dimensional arrays of Annexin V on phosphatidylserine-containing liposomes. *J. Mol. Biol.*, 236, 199-208 (1994).
2. Trotter P.J., et al., Ca<sup>2+</sup> concentration during binding determines the manner in which Annexin V binds to membranes. *Biochem. J.*, 308, 591-598 (1995).
3. O'Brien, I.E., et al., Annexin V and TUNEL use in monitoring the progression of apoptosis in plants. *Cytometry*, 29, 28-33 (1997).
4. Martin, S.J., et al., Early redistribution of plasma membrane phosphatidylserine is a general feature of apoptosis regardless of the initiating stimulus: inhibition by overexpression of Bcl-2 and Abl. *J. Exp. Med.*, 182, 1545-1556 (1995).
5. Kuypers, F.A., et al., Detection of altered membrane phospholipid asymmetry in subpopulations of human red blood cells using fluorescently labeled Annexin V. *Blood*, 87, 1179-1187 (1996).
6. van Engeland, M., Annexin V-affinity assay: a review on an apoptosis detection system based on phosphatidylserine exposure. *Cytometry*, 31, 1-9 (1998).
7. Bedner, E., Analysis of apoptosis by laser scanning cytometry. *Cytometry*, 35, 181-195 (1999).